

FIG. 1

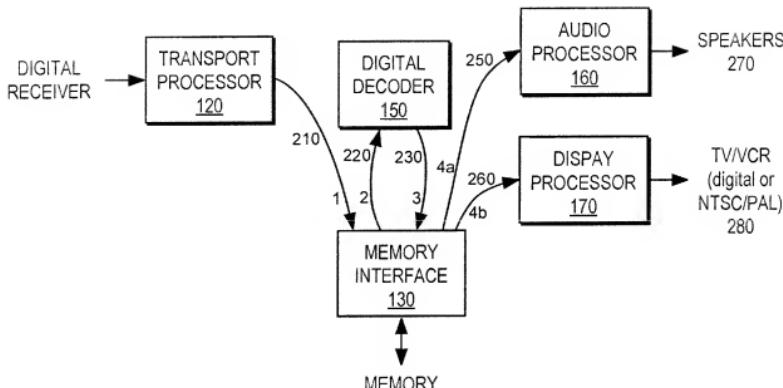


FIG. 2

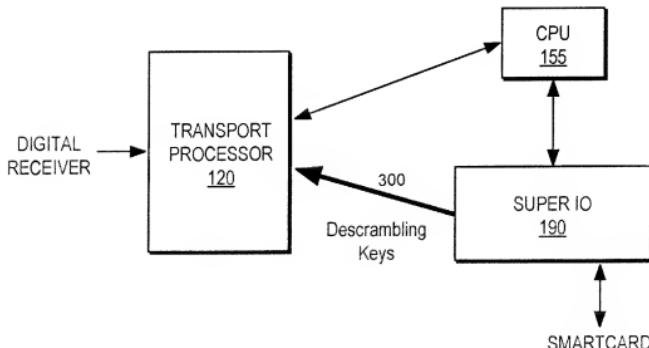


FIG. 3

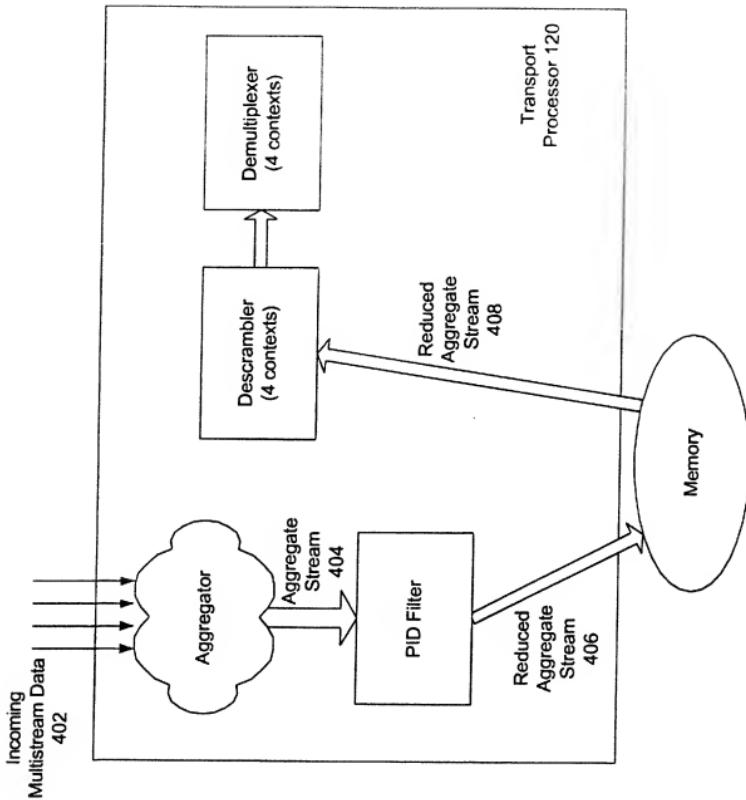


Fig. 4A

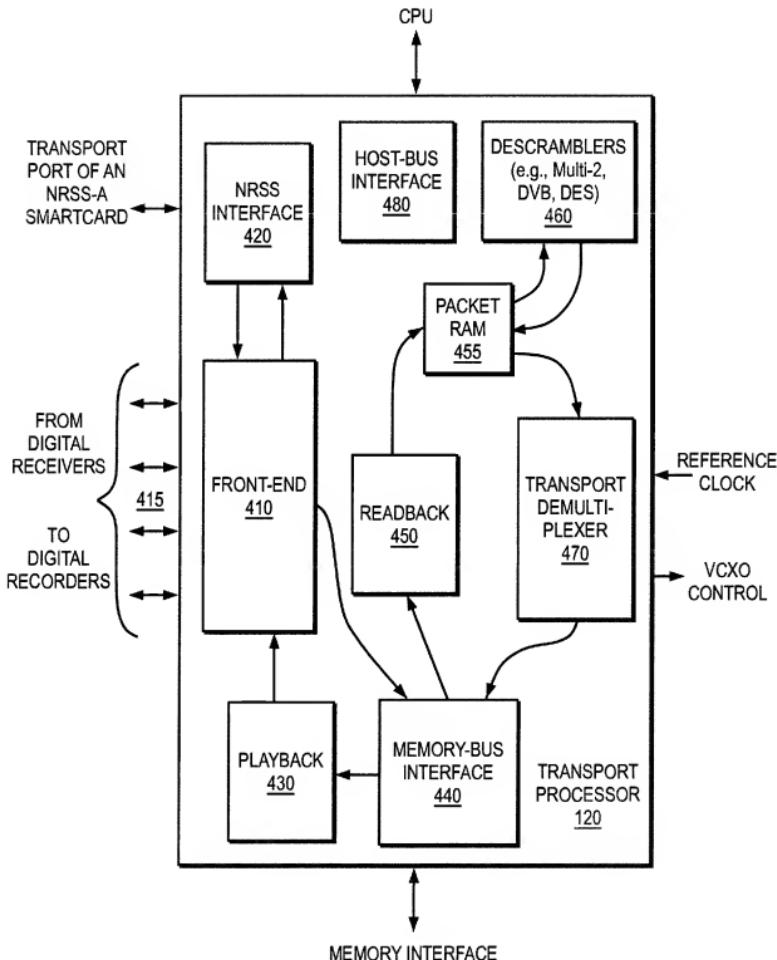


FIG. 4B

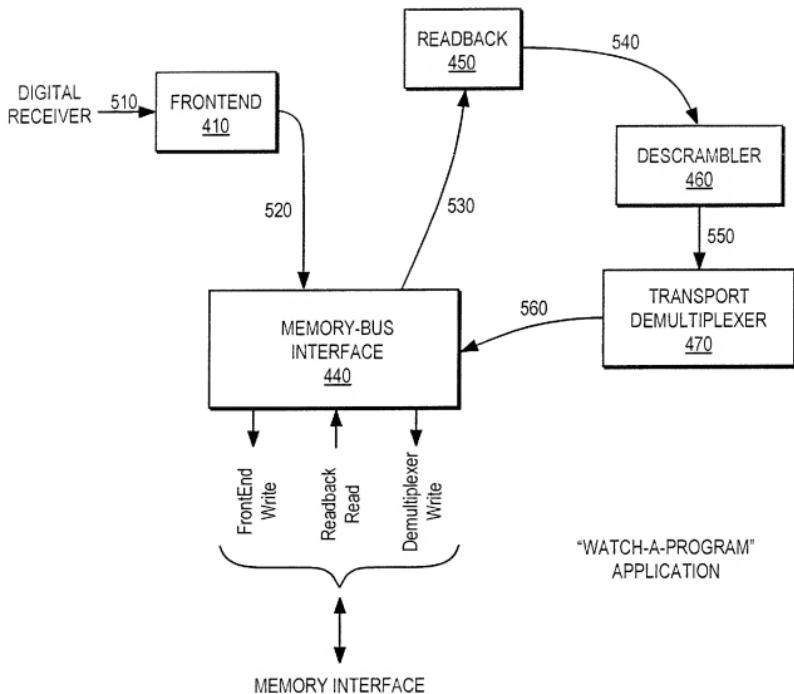


FIG. 5

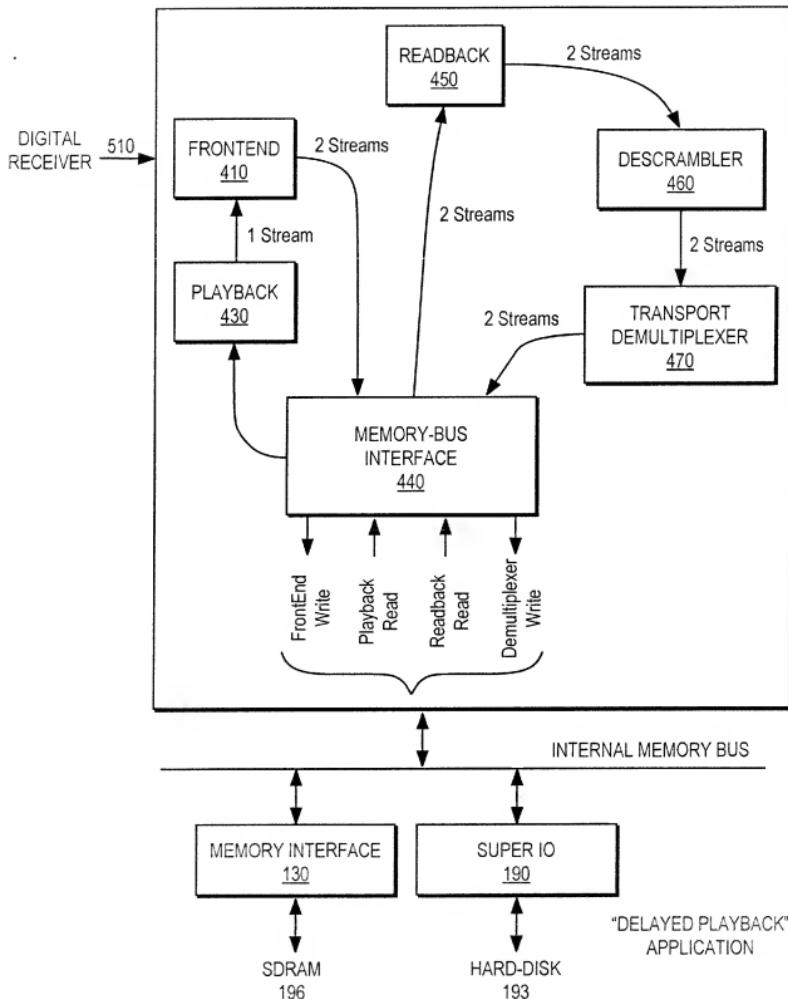


FIG. 6

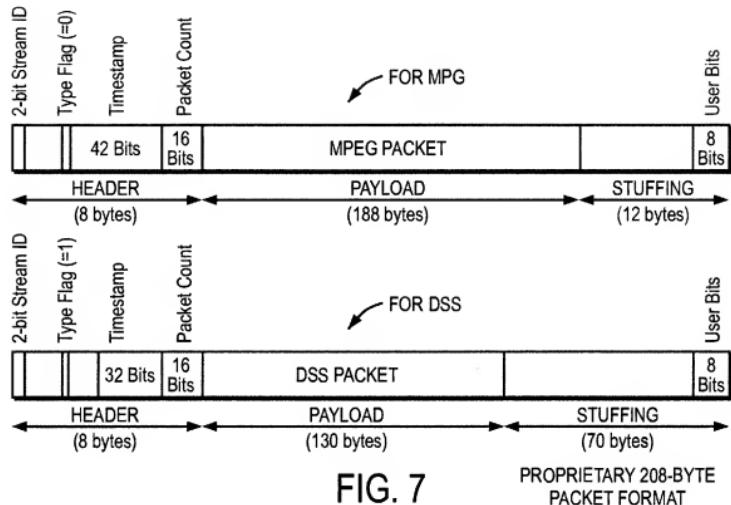


FIG. 7

PROPRIETARY 208-BYTE  
PACKET FORMAT

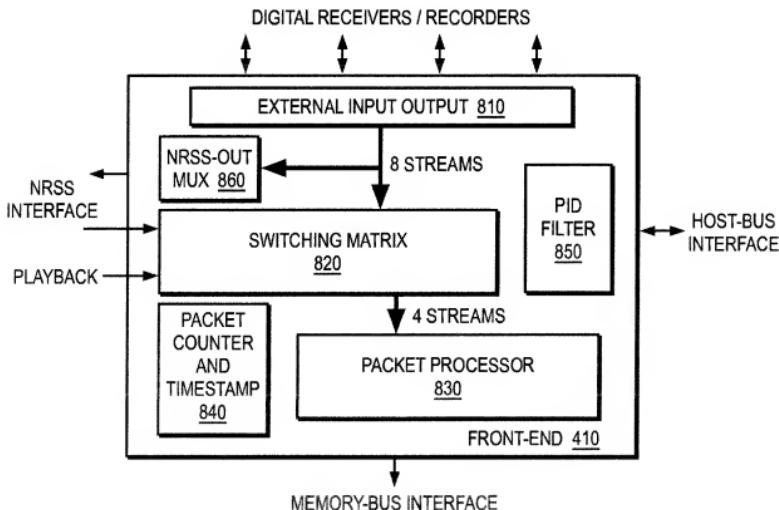


FIG. 8

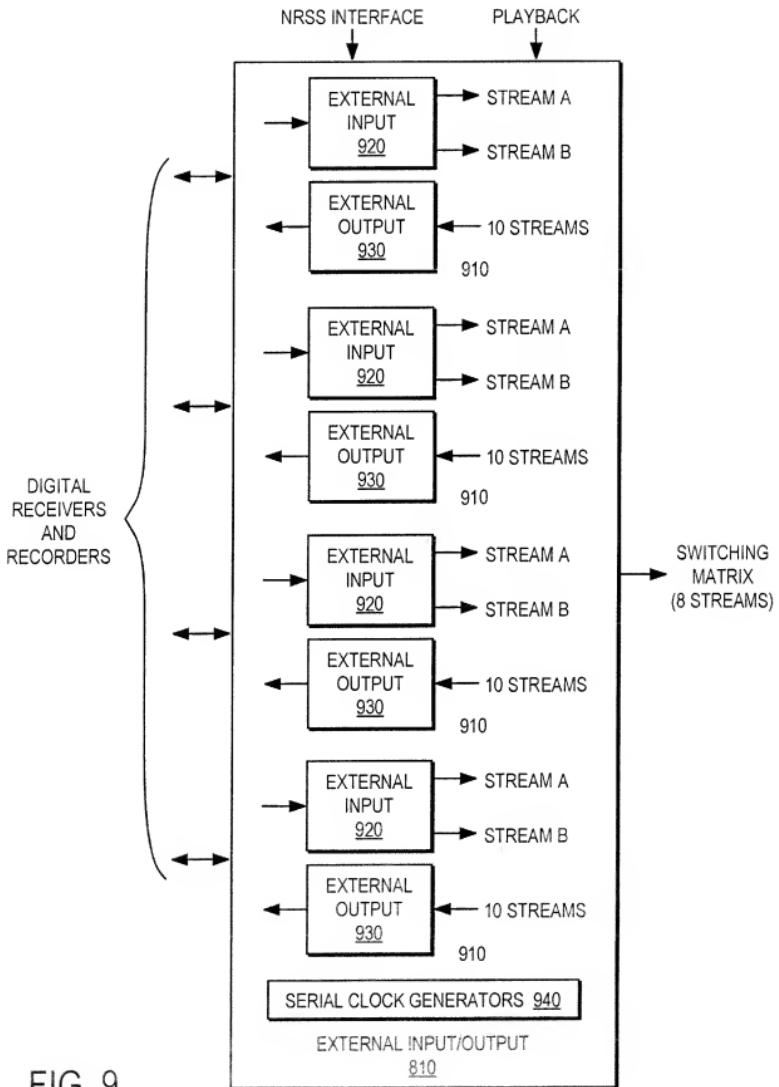


FIG. 9

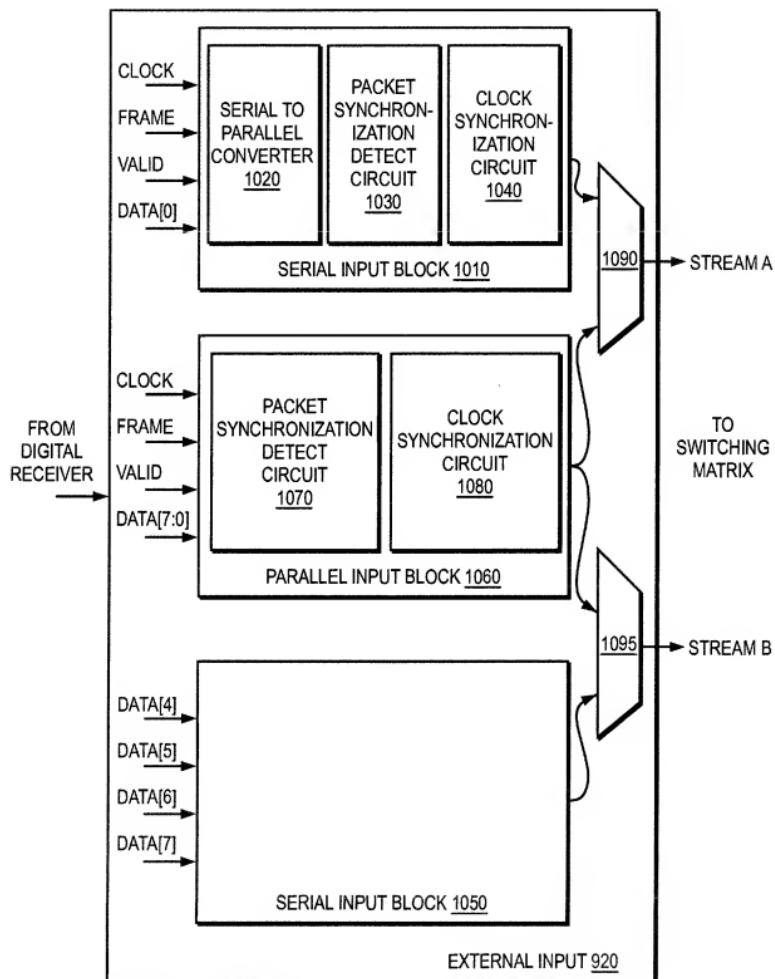


FIG. 10

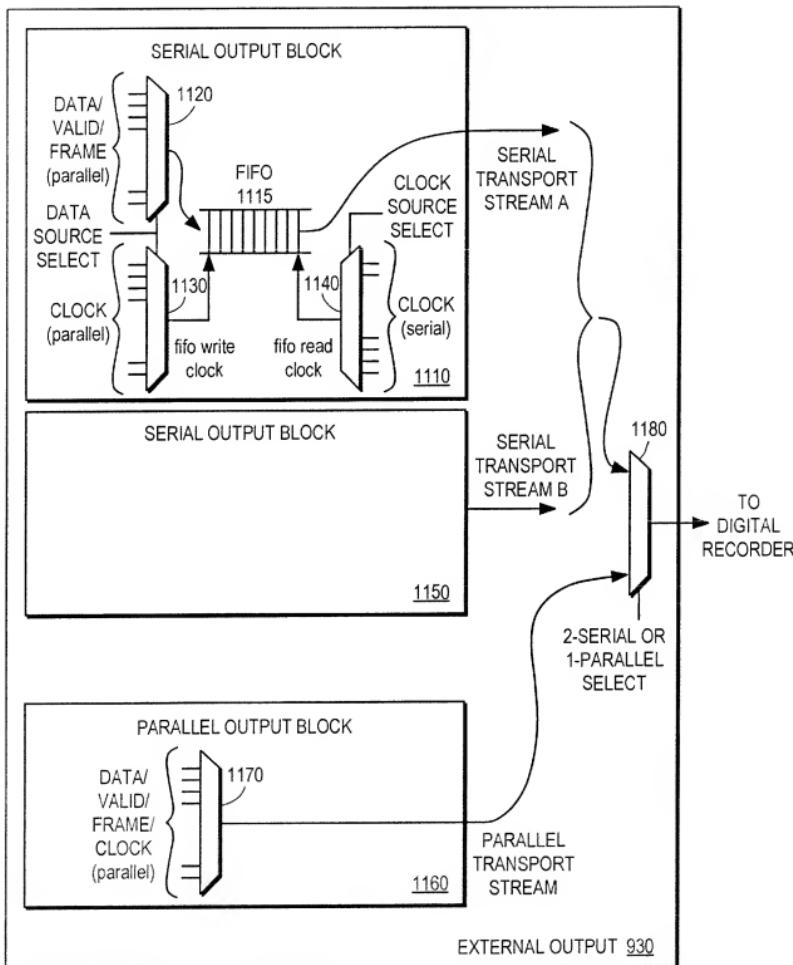


FIG. 11

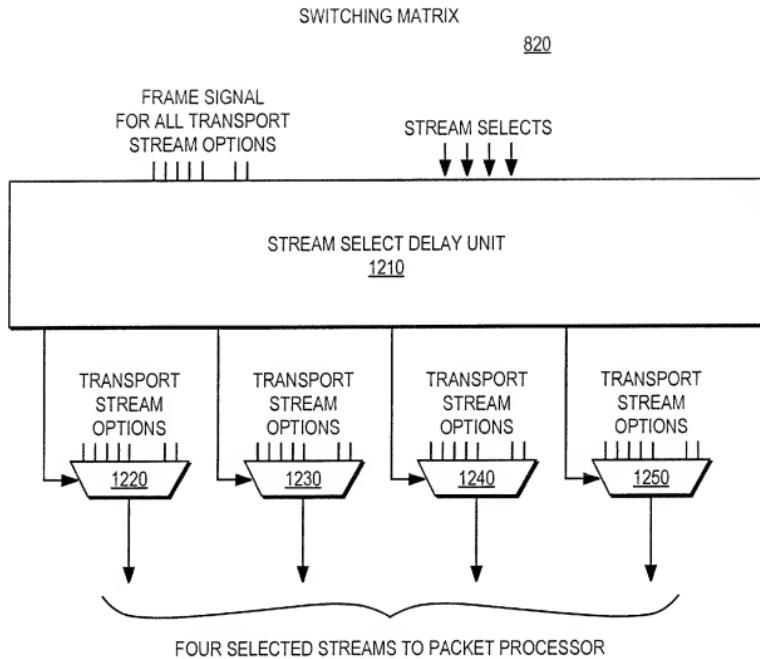


FIG. 12A

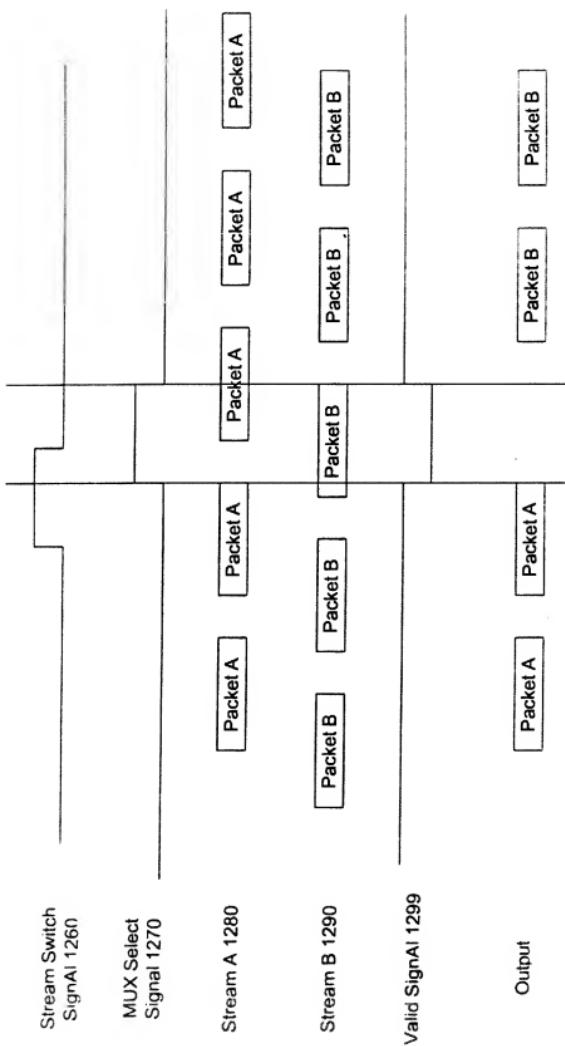


Fig. 12B

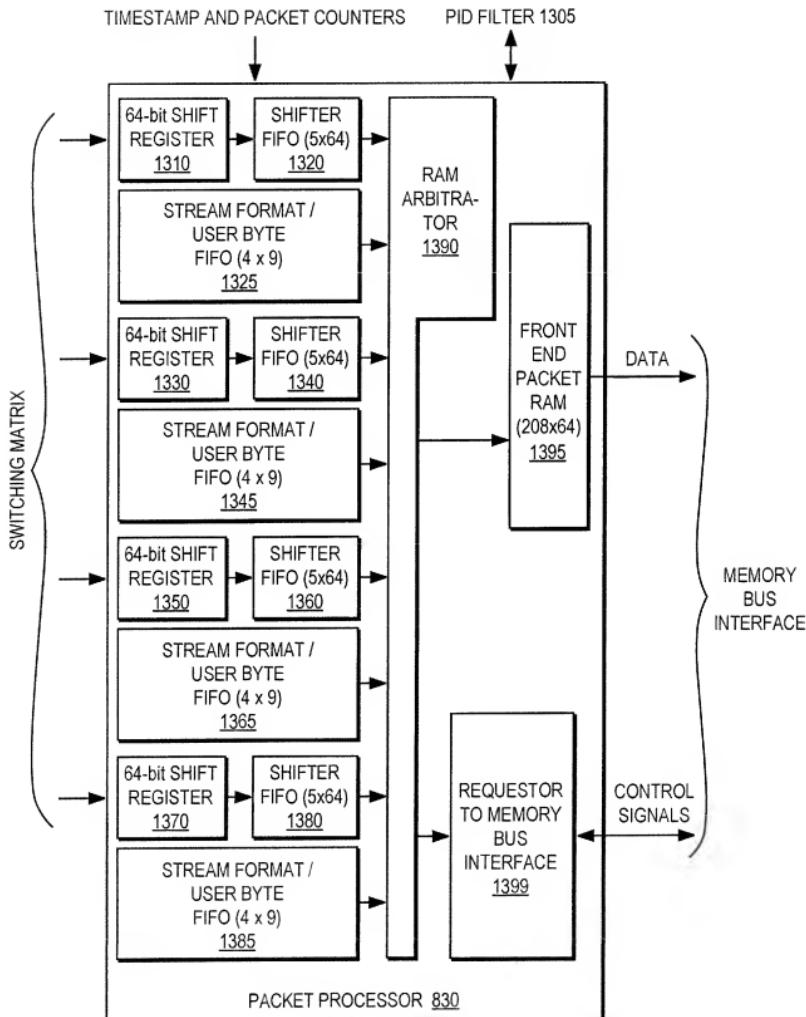


FIG. 13

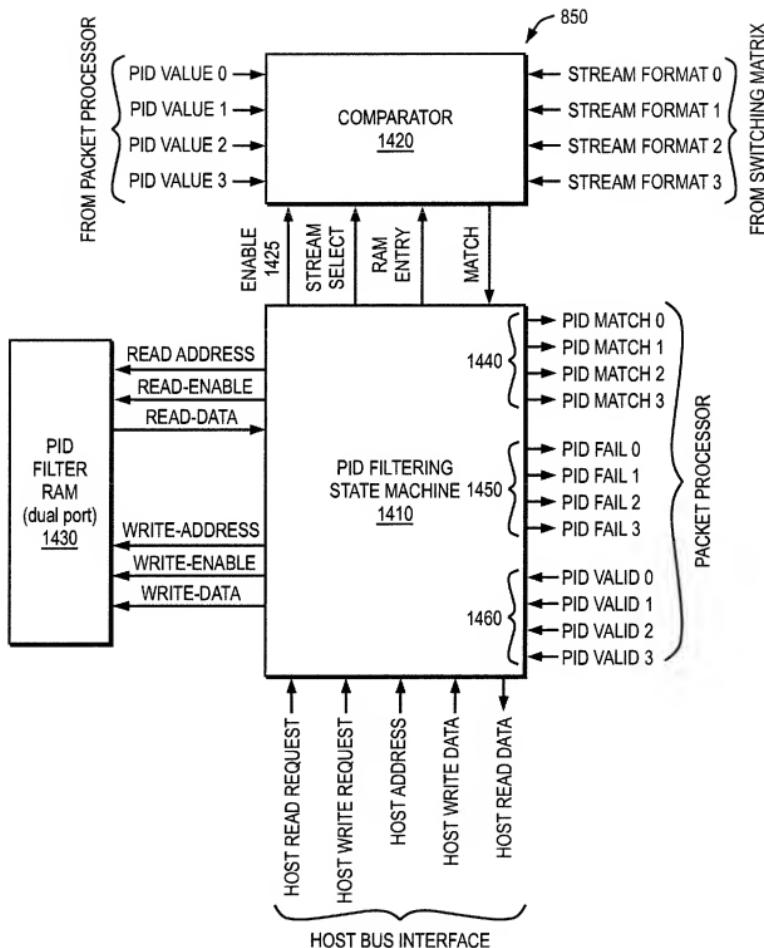


FIG. 14

#### FULL TRANSPORT: PLAYBACK RUNNING AT CONSTANT KNOWN RATE

1510

.....

## PARTIAL TRANSPORT: PLAYBACK RUNNING IN TIMESTAMP-PER-PACKET MODE

1520

## PARTIAL TRANSPORT: PLAYBACK RUNNING IN TIMESTAMP-PER-CHUNK MODE

■ = CHUNK LEAD PACKET  
(typically a PCR Packet)

1530

FIG. 15

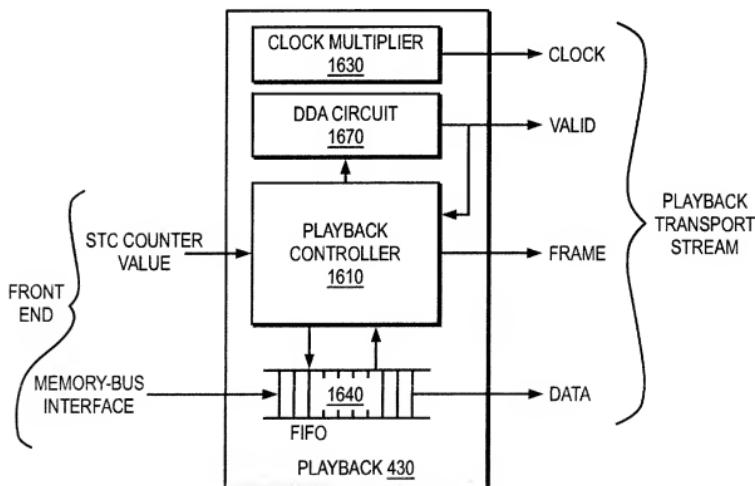


FIG. 16

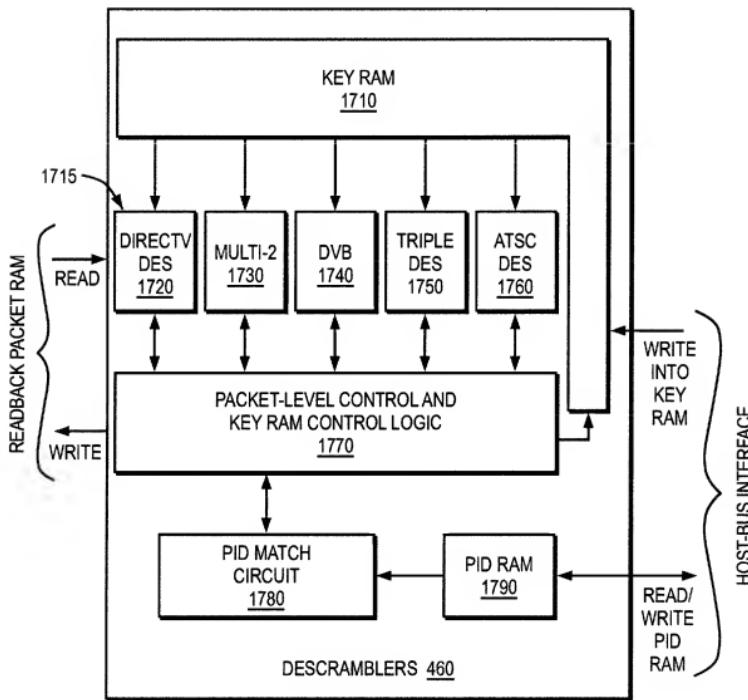


FIG. 17

*Throughput of the Descrambling Algorithms*

<u>Descrambling Algorithm</u>	<u>#cycles per 8 bytes</u>	<u>Thrput 108 MHz</u> (in Mbps)	<u>Thrput 150 MHz</u> (in Mbps)	<u>Thrput 180 MHz</u> (in Mbps)
Multi-2	36	192	267	320
DSS DES-ECB	28	247	343	411
DVB	65	106	148	177
MPEG DES-ECB	28	247	343	411
Triple-DES CBC	72	96	133	160

*Number of Streams That can be Descrambled For Different Broadcasts*

<u>Broadcast Type</u>	<u>Algorithm Required</u>	<u>Strm Rate</u> (Mbps)	<u>#Sturms Descr</u> 108 MHz	<u>#Sturms Descr</u> 150 MHz	<u>#Sturms Descr</u> 180 MHz
Europe DVB*	DVB	60	1.8	2.5	3.0
Terrestrial US	Triple DES	19.4	4.9	6.9	8.2
DirecTV US	DSS DES	38.8	6.4	8.8	8.8
DirecTV Japan**	DVB	40	2.7	3.7	4.4
ARIB BS4 Japan	Multi-2	28.04	6.8	9.5	9.5
ATSC Cable**	Triple DES	38.8	2.5	3.4	4.1
EchoStar US	DVB	24	4.4	6.2	7.4

\* 60 Mbps contains close to 10 programs, out of which we would descramble 2 or 3. So the effective rate is more like 20 Mbps

\*\* Likewise for these cases as well, a stream is packed with numerous programs, and we would descramble only a few.

*Number of Streams That Can be DescrambledFor Different Broadcasts*

<u>Descrambling Algorithm</u>	<u>#StdDefnPgms Descr</u>			<u>#HiDefnPgms Descr</u>		
	<u>108 MHz</u>	<u>150 MHz</u>	<u>180 MHz</u>	<u>108 MHz</u>	<u>150 MHz</u>	<u>180 MHz</u>
Multi-2	32	44	53	10	14	17
DSS DES	41	57	69	13	18	21
DVB	18	25	30	6	8	9
MPEG DES	41	57	69	13	18	21
Triple-DES	16	22	27	5	7	8

Note: For this table we assume SD-Rate=6Mbps/program

HD-Rate=19.2Mbps/program

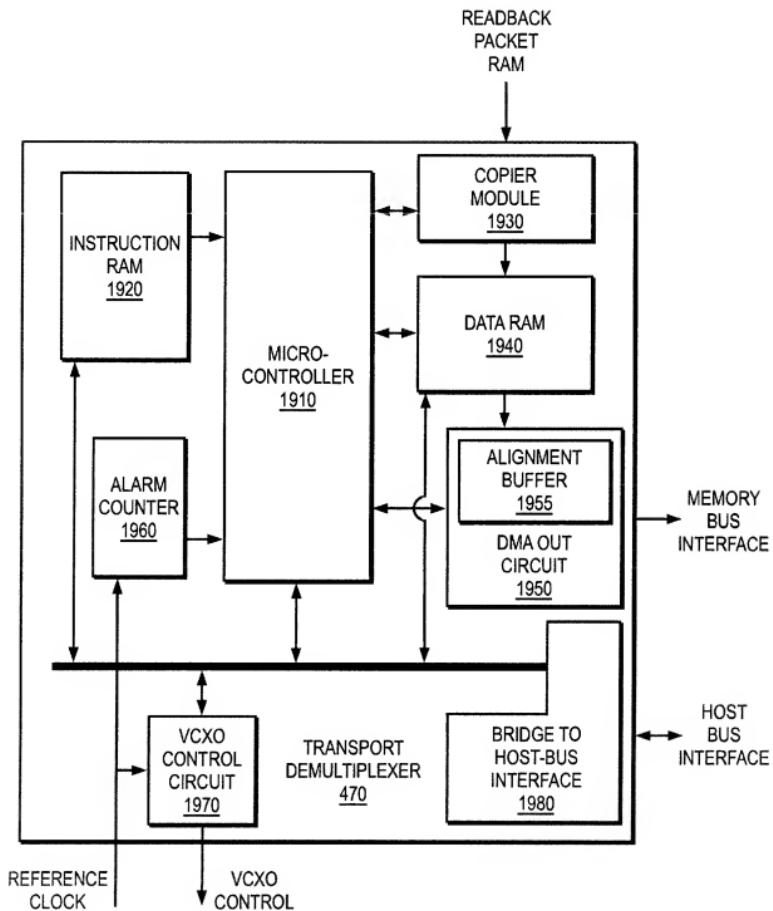


FIG. 19

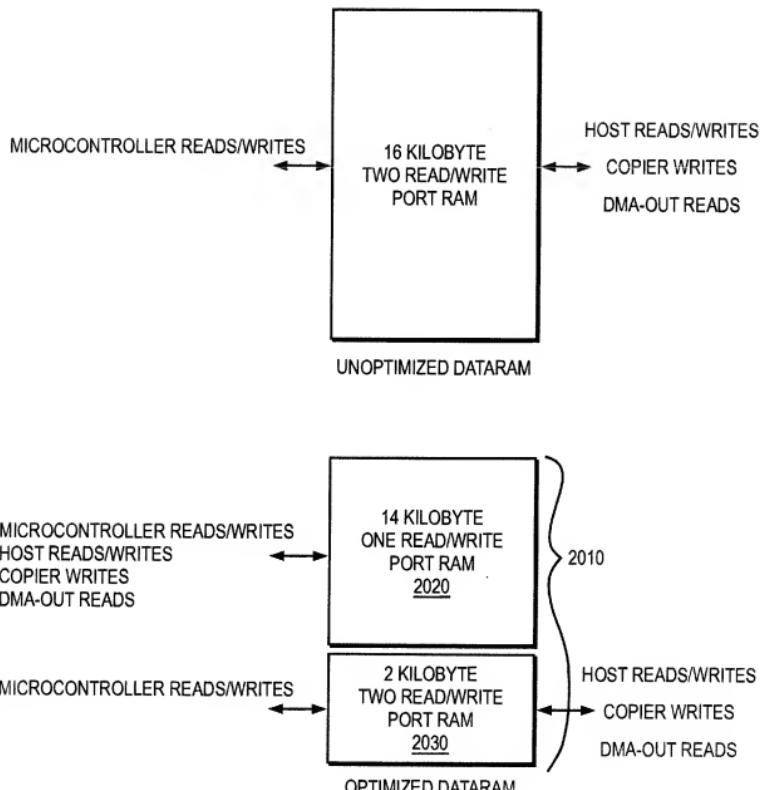


FIG. 20